Application No. 10/036,469

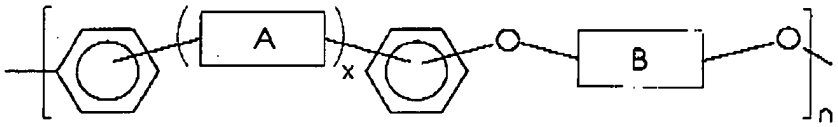
AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings of claims in the application:

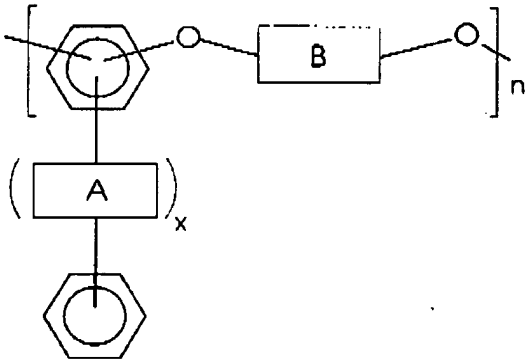
LISTING OF CLAIMS:

1-15. (Cancelled)

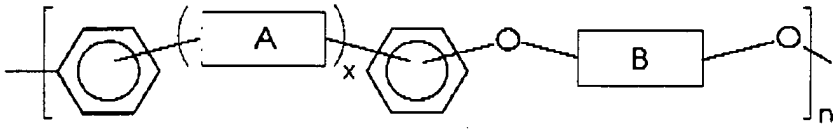
16. (Currently Amended) A composition which comprises a crosslinked or chain extended polymer having a backbone of the formula



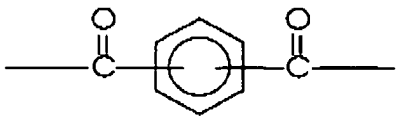
or

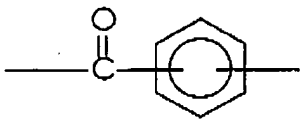


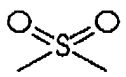
wherein the phenyl groups and the A and B groups can be substituted, wherein x is an integer of 0 or 1 and n is an integer representing the number of repeating monomer units and is ~~at least 2~~at least 5, wherein, when the polymer backbone is of the formula

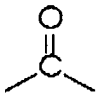


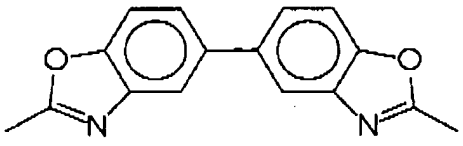
either (a) A is

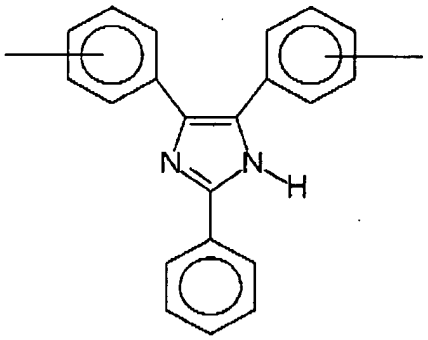


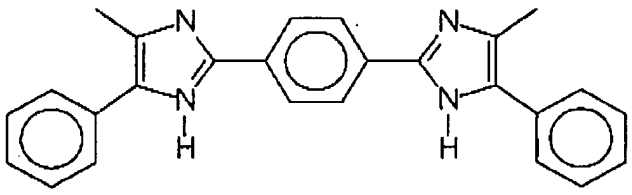






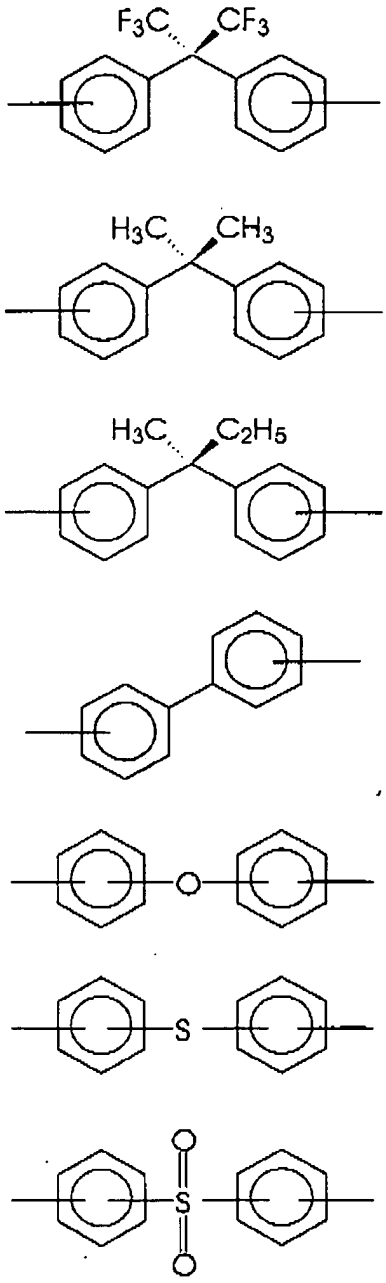


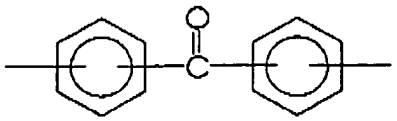


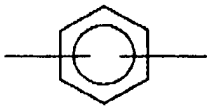


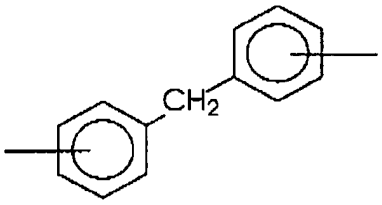
-O-,

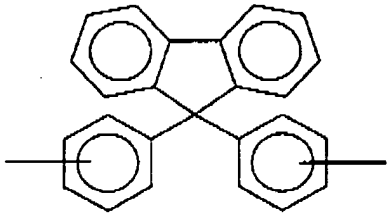
or mixtures thereof, and B is

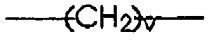




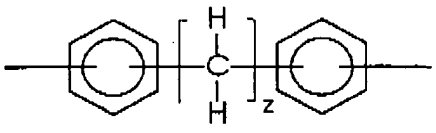




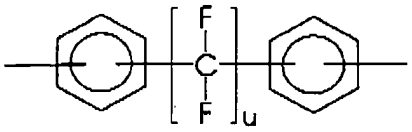




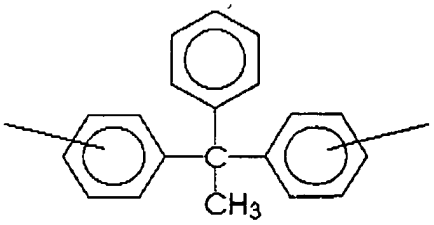
wherein v is an integer of from 1 to about 20,

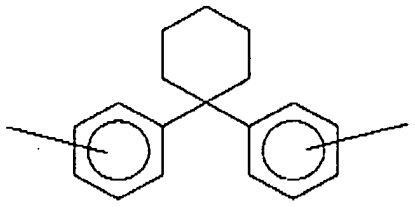


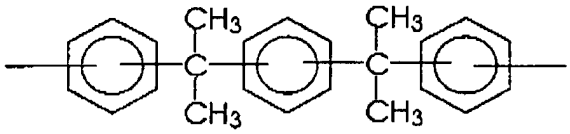
wherein z is an integer of from 2 to about 20,

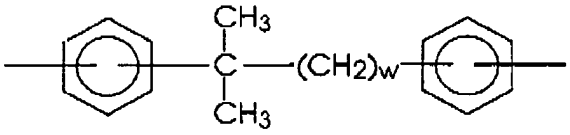


wherein u is an integer of from 1 to about 20,

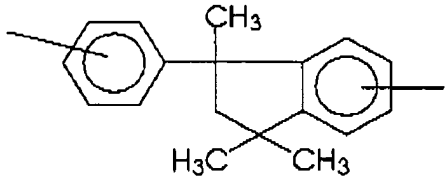


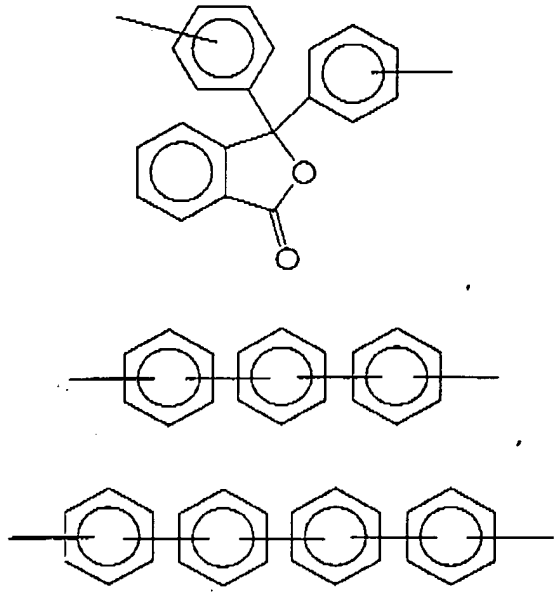






wherein w is an integer of from 1 to about 20,

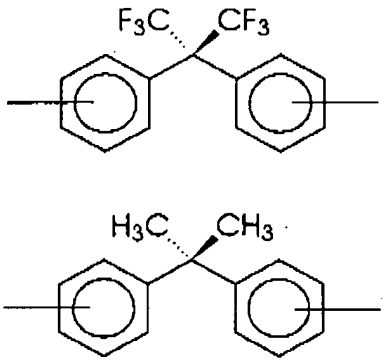




or mixtures thereof, or (b) A is

$$-C(CH_3)_2-$$

and B is



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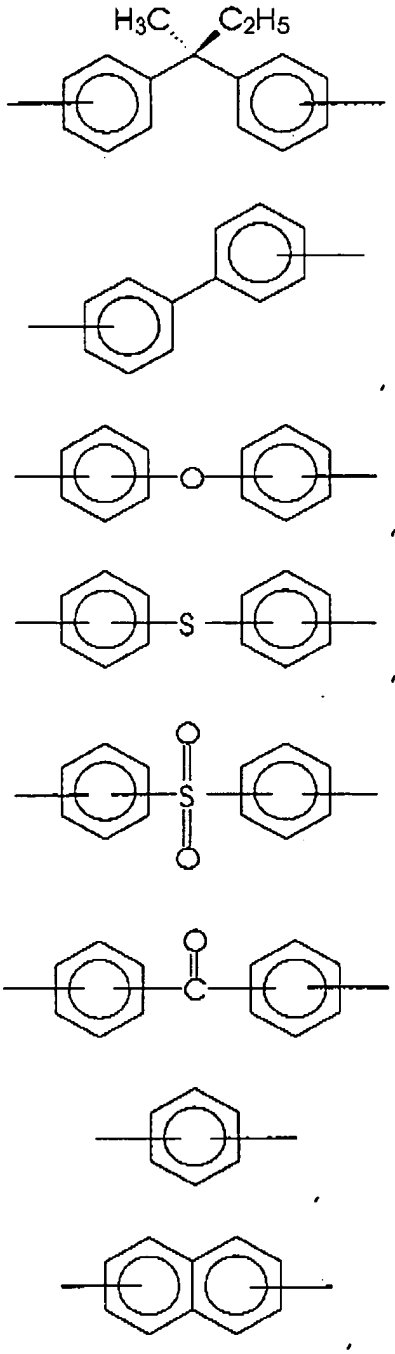
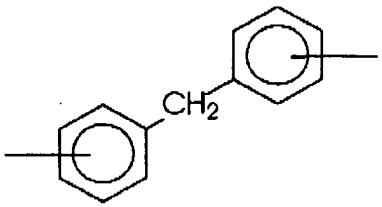
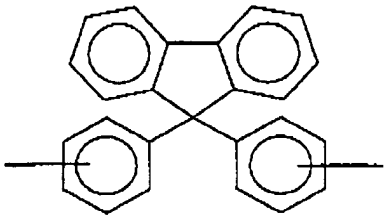
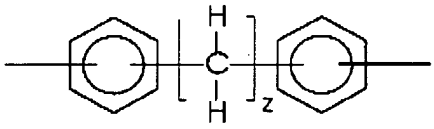
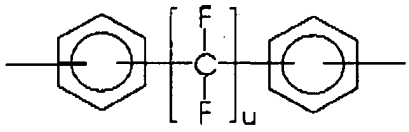




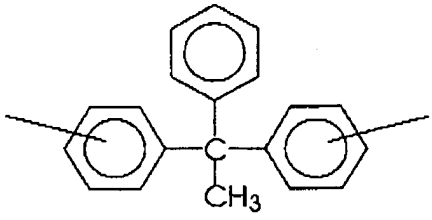


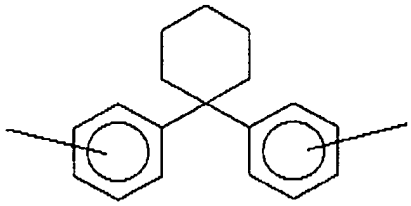


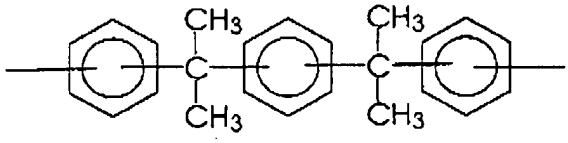
wherein z is an integer of from 2 to about 20,

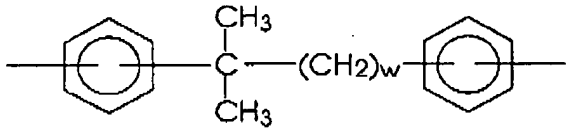


wherein u is an integer of from 1 to about 20,

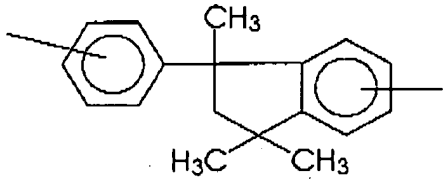


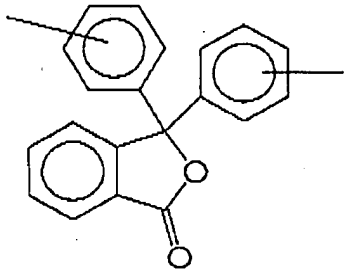


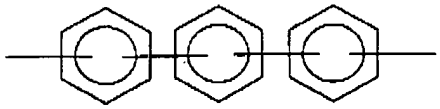


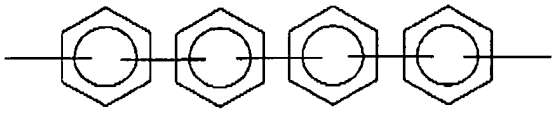


wherein w is an integer of from 1 to about 20,

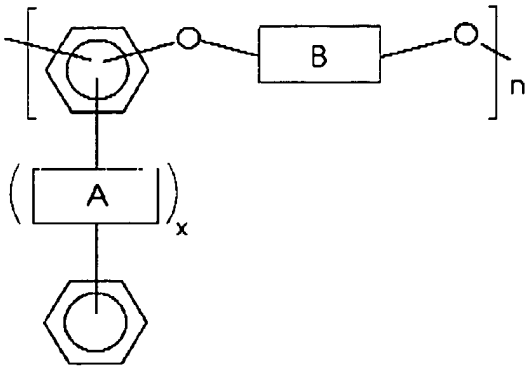




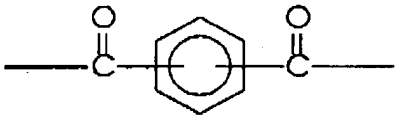


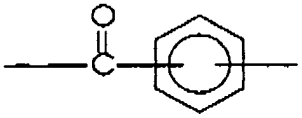


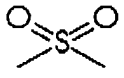
or mixtures thereof, and when the polymer backbone is of the formula

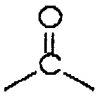


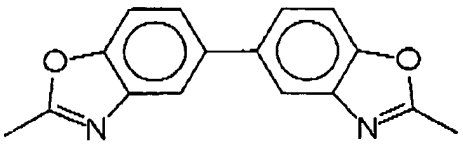
A is

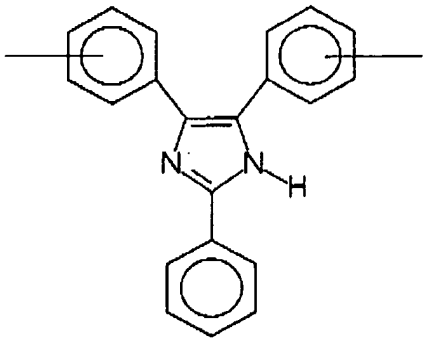


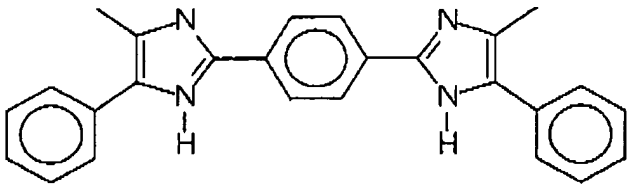








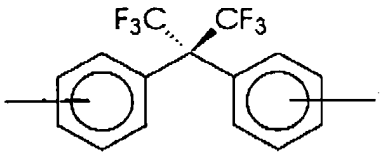


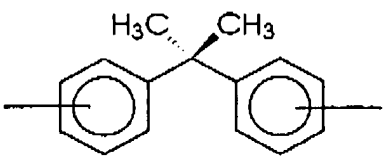


-O-,

-C(CH$_3$)$_2$-,

or mixtures thereof, and B is





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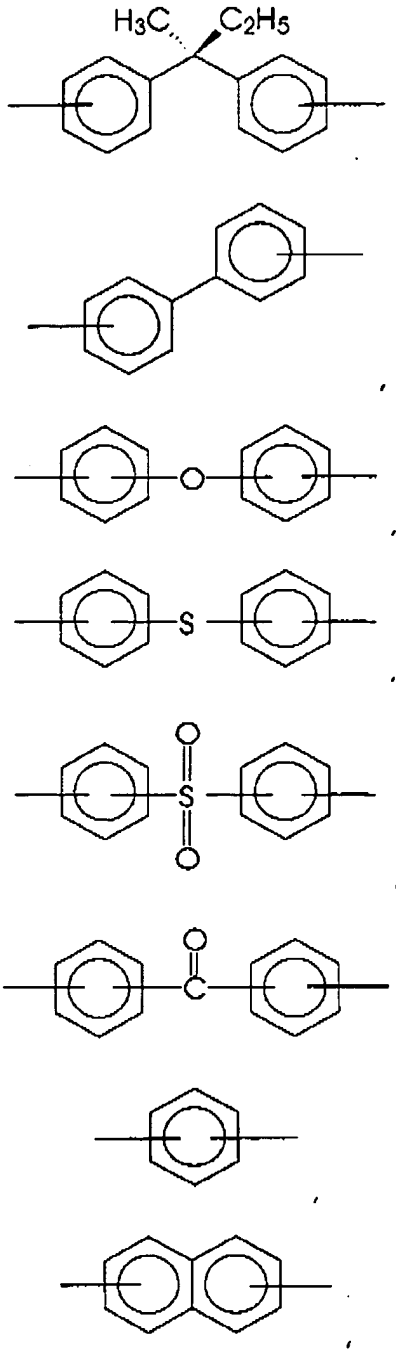
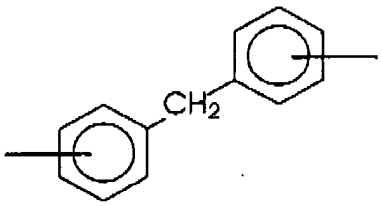
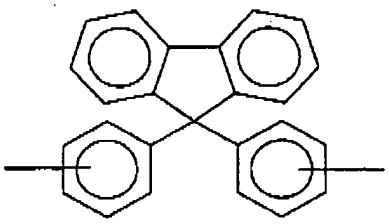
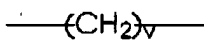
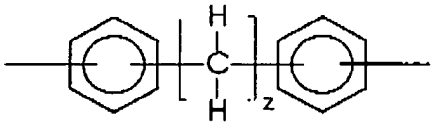




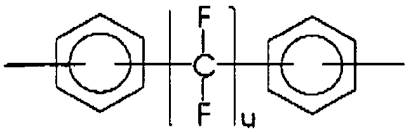




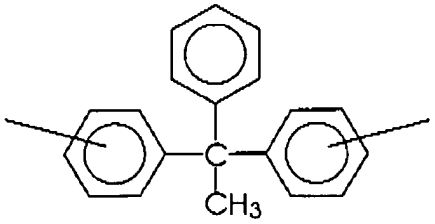
wherein v is an integer of from 1 to about 20,

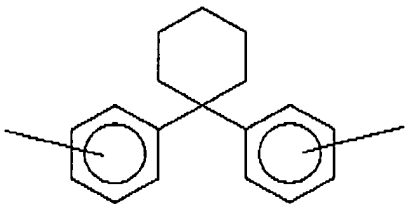


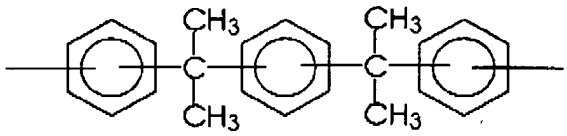
wherein z is an integer of from 2 to about 20,

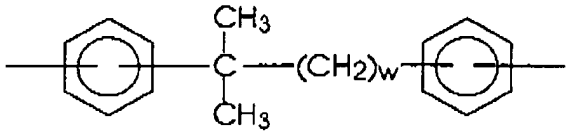


wherein u is an integer of from 1 to about 20,

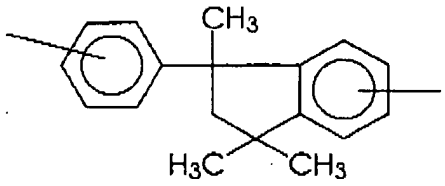


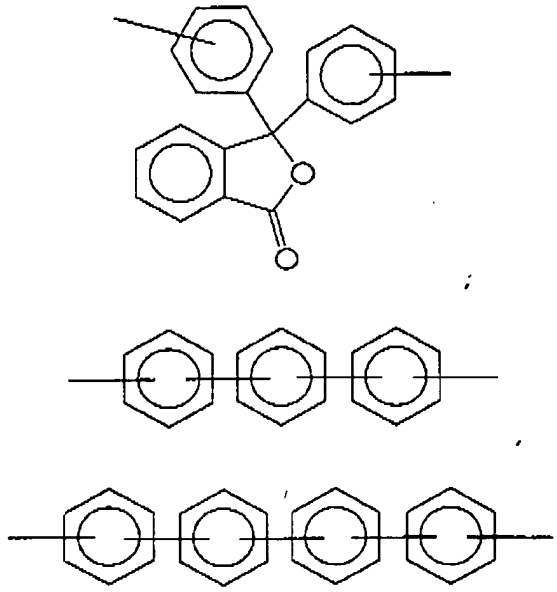




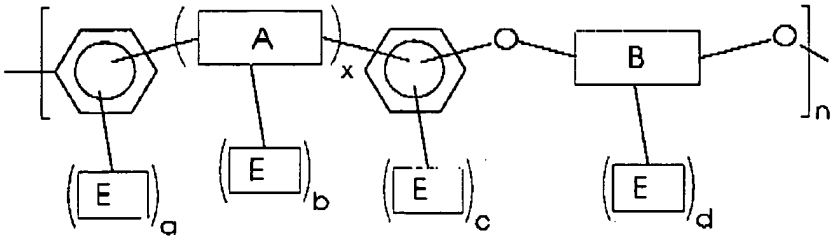


wherein w is an integer of from 1 to about 20,

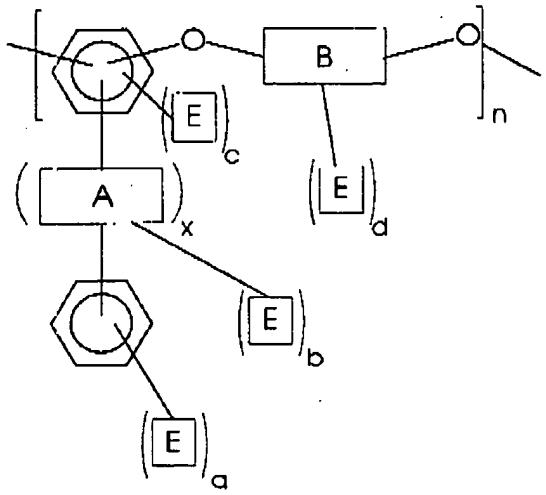




or mixtures thereof, said crosslinked or chain extended polymer having been formed from a precursor polymer having epoxy groups contained on at least some of the monomer repeat units thereof, said precursor polymer being of the formula



or

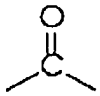


wherein "E" is an epoxy group and a, b, c, and d are each integers of 0, 1, 2, 3, or 4, provided that at least one of a, b, c, and d is equal to or greater than 1 in at least some of the monomer repeat units of the precursor polymer, said crosslinking or chain extension having occurred through linking groups formed by a reaction between the epoxy groups contained on at least some of the monomer repeat units of the precursor polymer and amine groups on an amine curing agent.

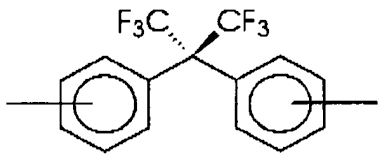
17-32. (Cancelled)

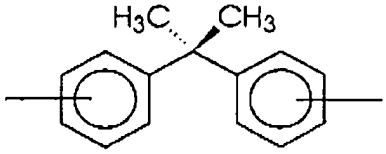
Application No. 10/036,469

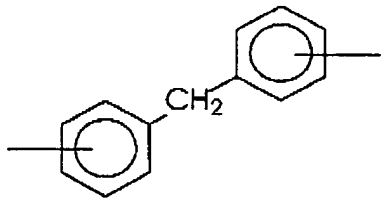
33. (Previously Presented) A composition according to claim 16 wherein x is 1, A is

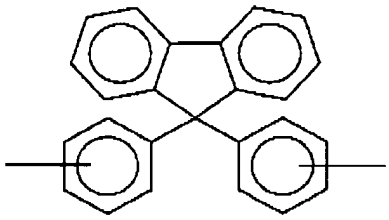


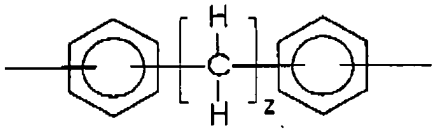
and B is







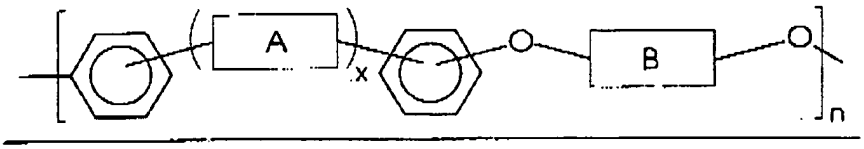




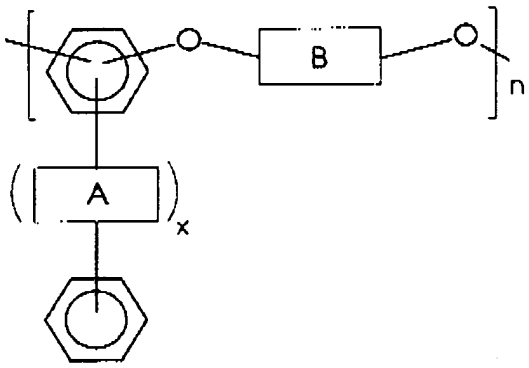
wherein z is an integer of from 2 to about 20, or a mixture thereof.

34-43. (Canceled)

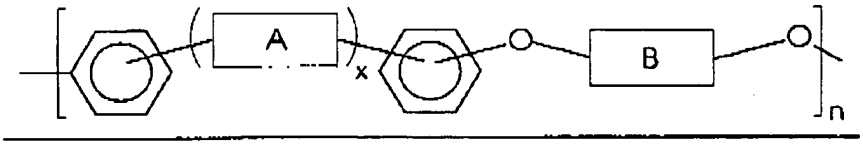
44. (Currently Amended) A composition ~~according to claim 16~~ which comprises a crosslinked or chain extended polymer having a backbone of the formula



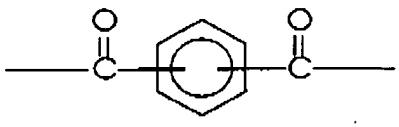
or

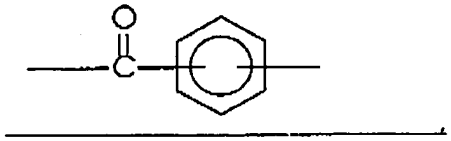


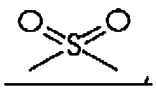
wherein the phenyl groups and the A and B groups can be substituted, wherein x is an integer of 0 or 1 and n is an integer representing the number of repeating monomer units and is at least 2, wherein, when the polymer backbone is of the formula

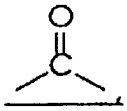


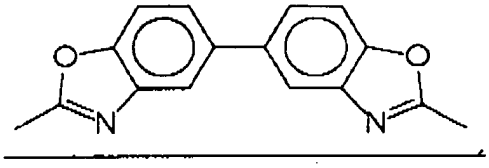
either (a) A is

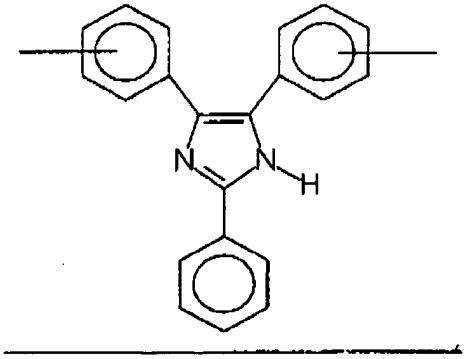


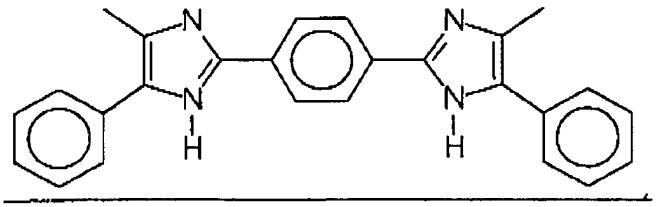






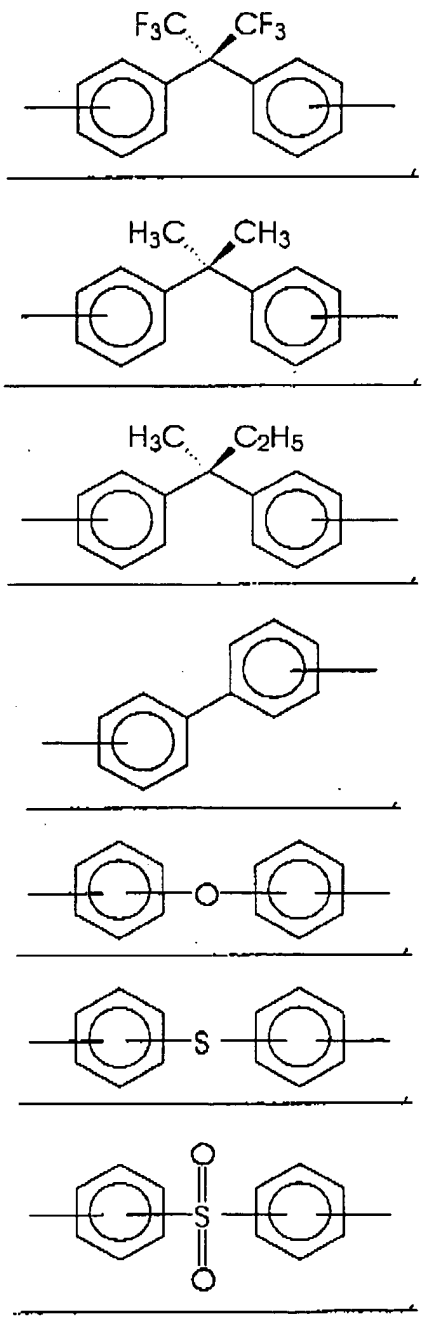


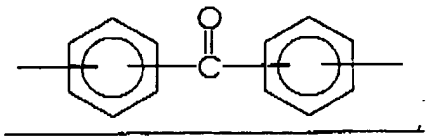


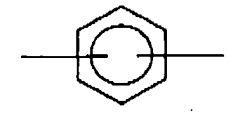


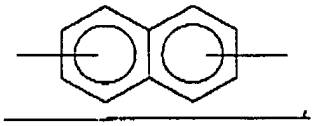
-O-

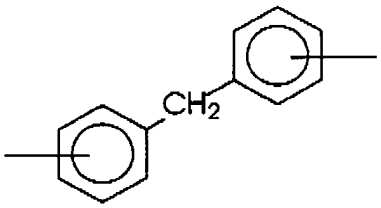
or mixtures thereof, and B is

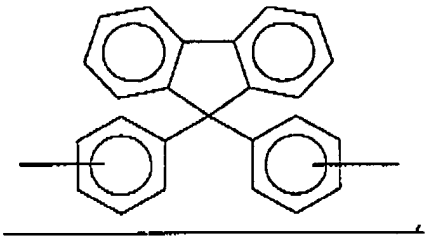

F3C
CF3
H3C
CH3
H3C
C2H5
O
S
S
O
O

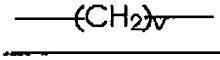




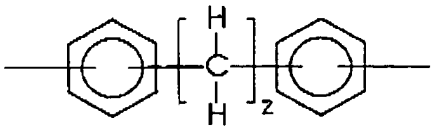




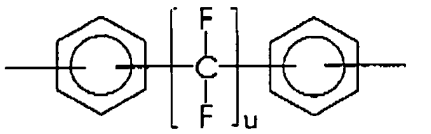




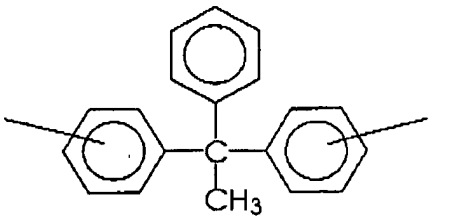
wherein v is an integer of from 1 to about 20,

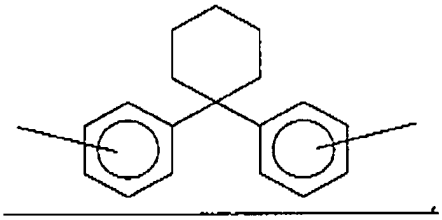


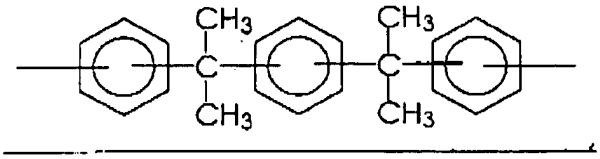
wherein z is an integer of from 2 to about 20,

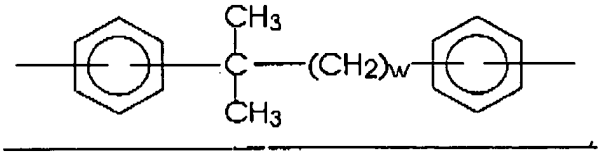


wherein u is an integer of from 1 to about 20,

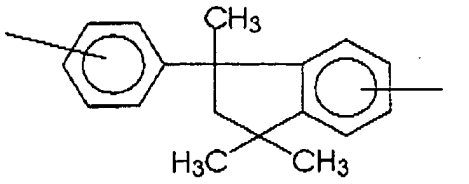


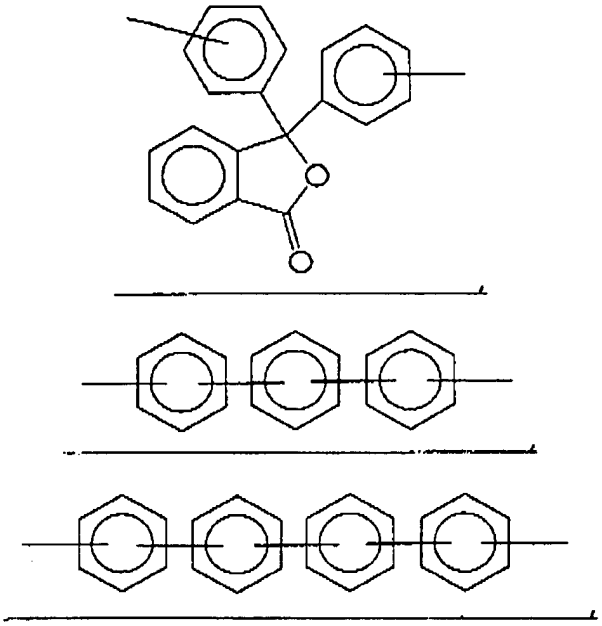






wherein w is an integer of from 1 to about 20,

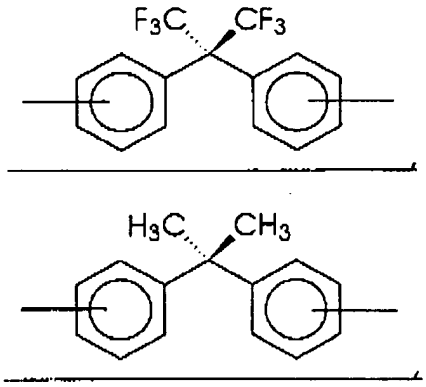


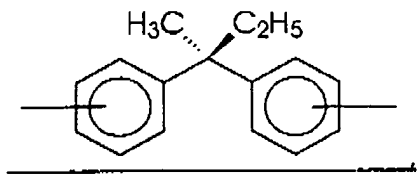


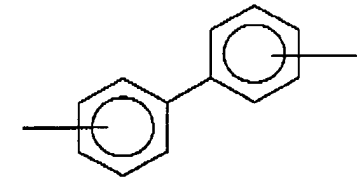
or mixtures thereof, or (b) A is

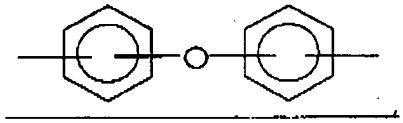
$-C(CH_3)_2-$

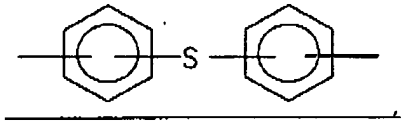
and B is

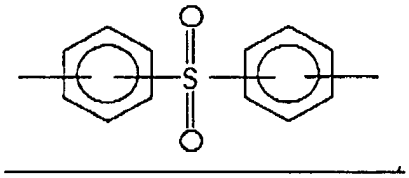


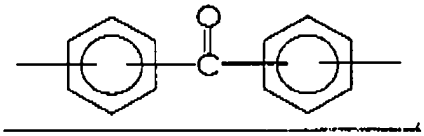

H3C
C2H5

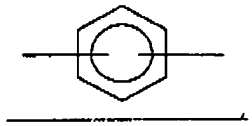


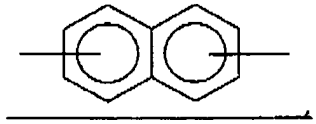


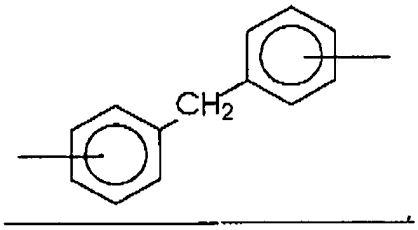

S

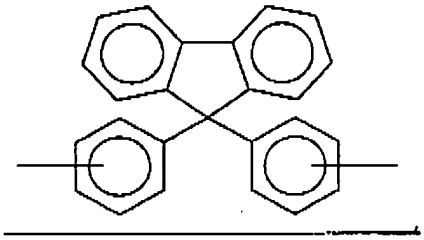

S

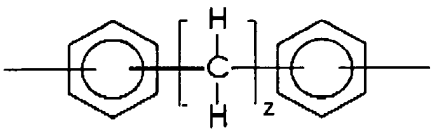

C



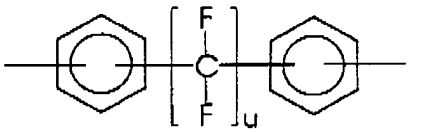




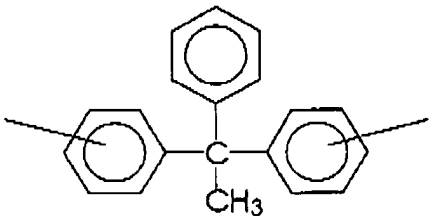


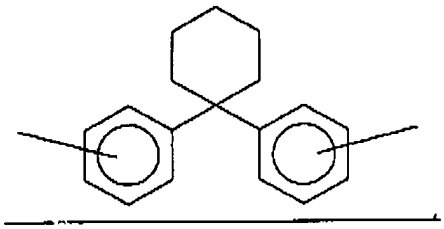


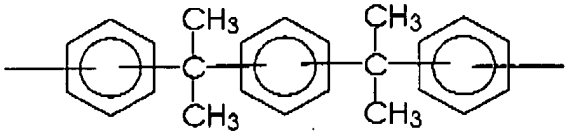
wherein z is an integer of from 2 to about 20,

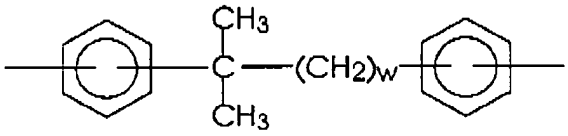


wherein u is an integer of from 1 to about 20,

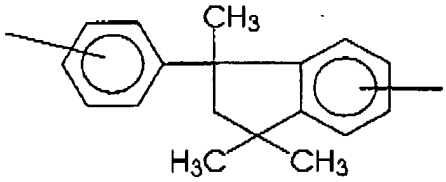


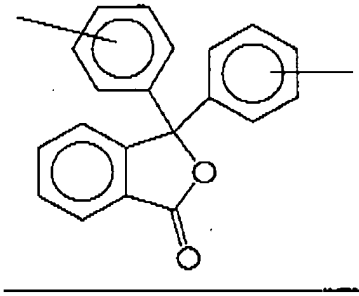


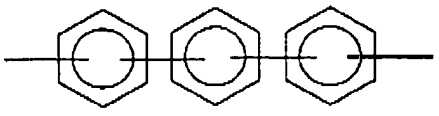


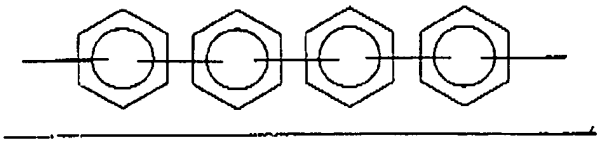


wherein w is an integer of from 1 to about 20,

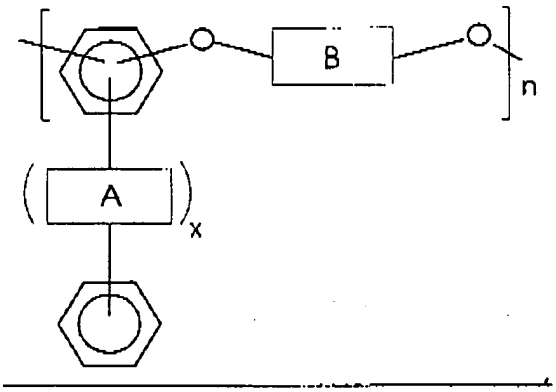




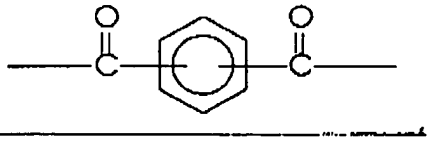


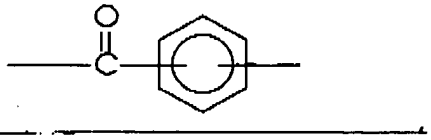


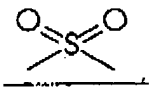
or mixtures thereof, and when the polymer backbone is of the formula

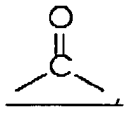


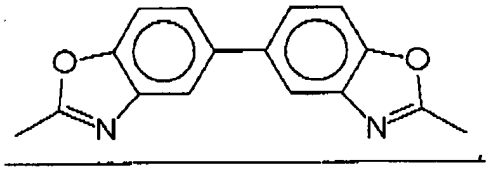
A is

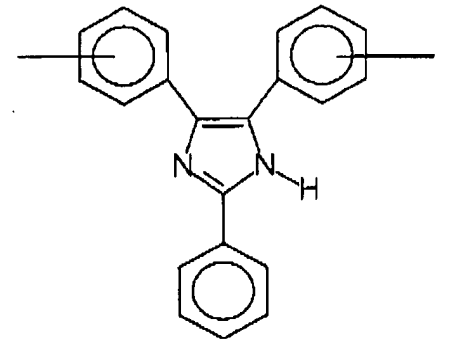


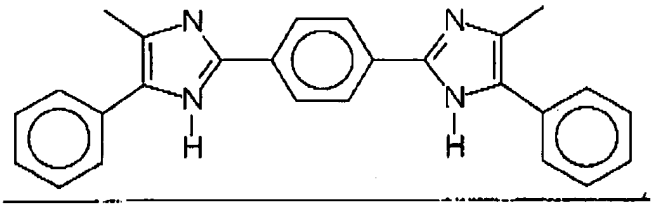








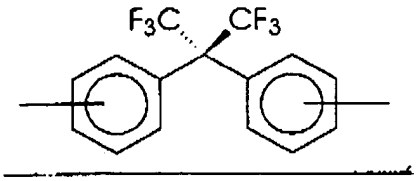


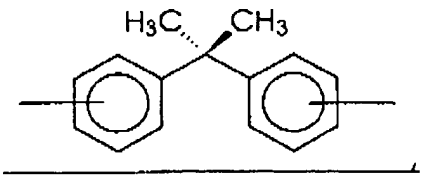


-O-,

-C(CH$_3$)$_2$-,

or mixtures thereof, and B is





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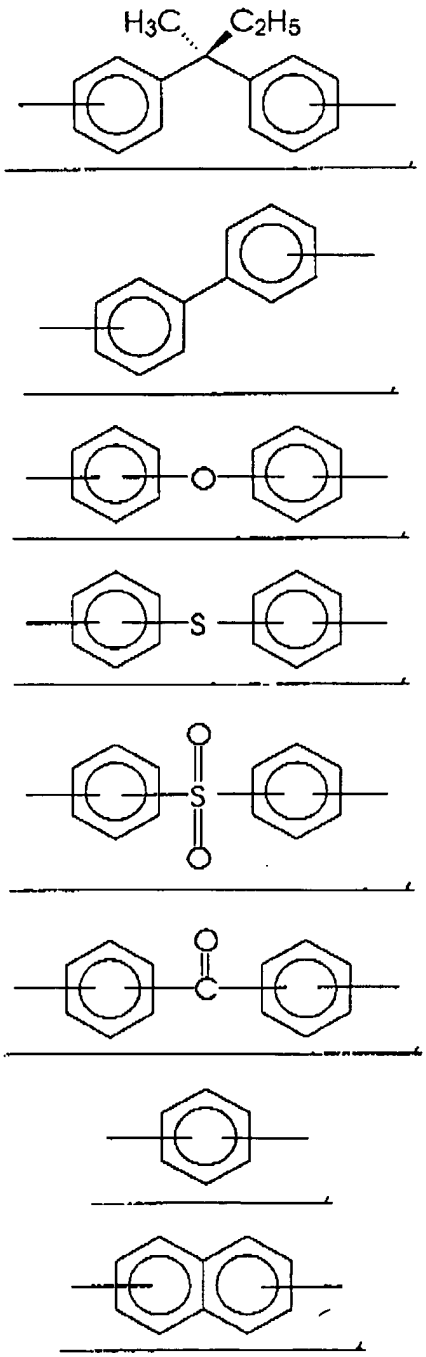
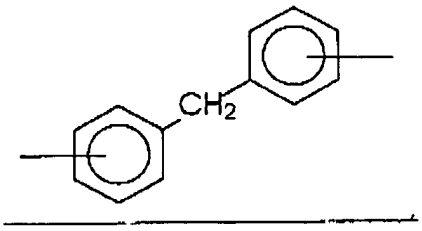
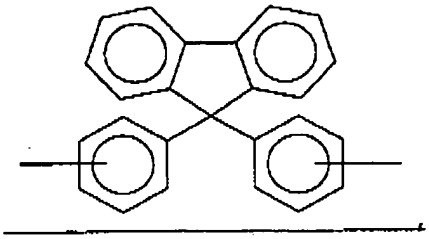
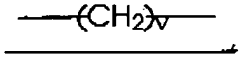
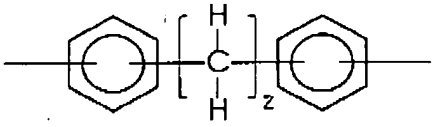




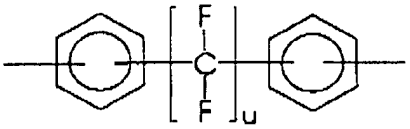




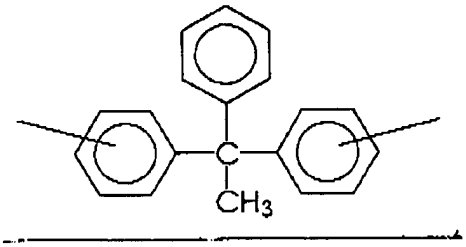
wherein v is an integer of from 1 to about 20,

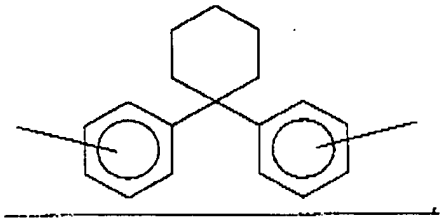


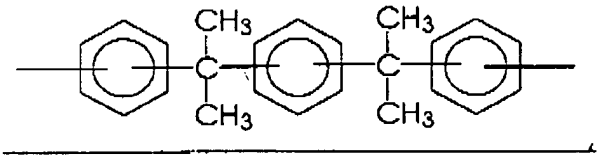
wherein z is an integer of from 2 to about 20,

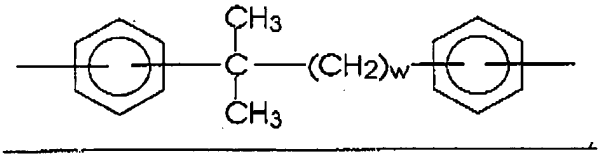


wherein u is an integer of from 1 to about 20,

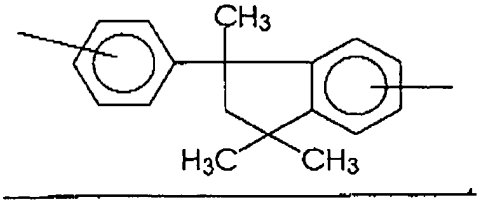


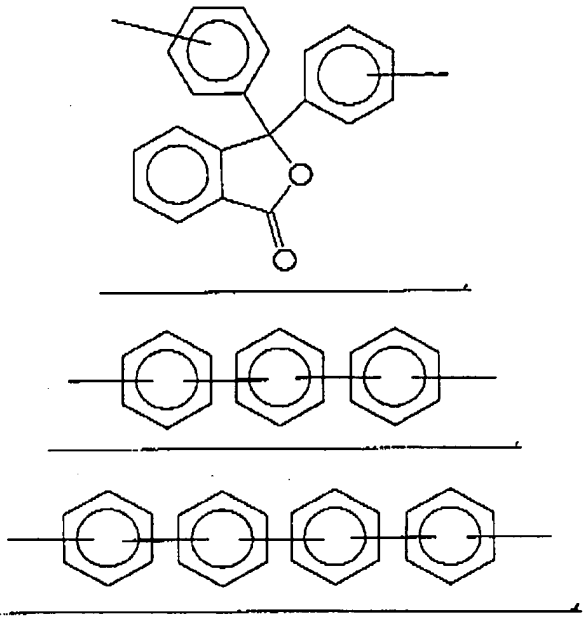




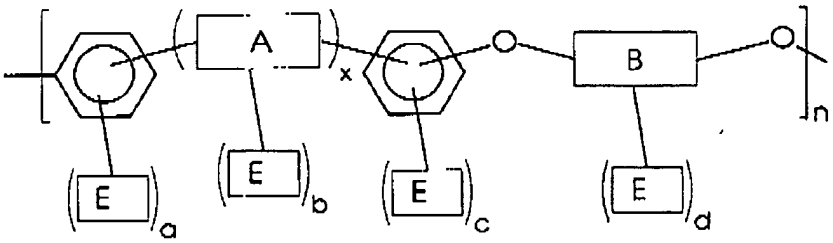


wherein w is an integer of from 1 to about 20,

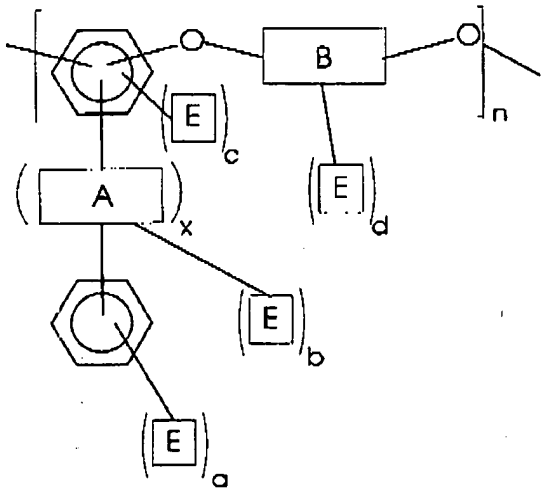




or mixtures thereof, said crosslinked or chain extended polymer having been formed from a precursor polymer having epoxy groups contained on at least some of the monomer repeat units thereof, said precursor polymer being of the formula



or



wherein "E" is an epoxy group and a, b, c, and d are each integers of 0, 1, 2, 3, or 4, provided that at least one of a, b, c, and d is equal to or greater than 1 in at least some of the monomer repeat units of the precursor polymer, said crosslinking or chain extension having occurred through linking groups formed by a reaction between the epoxy groups contained on at least some of the monomer repeat units of the precursor polymer and amine groups on an amine curing agent, wherein the polymer has end groups derived from the "A" groups of the polymer.

45. (Original) A composition according to claim 16 wherein the polymer has end groups derived from the "B" groups of the polymer.

46-56. (Cancelled)

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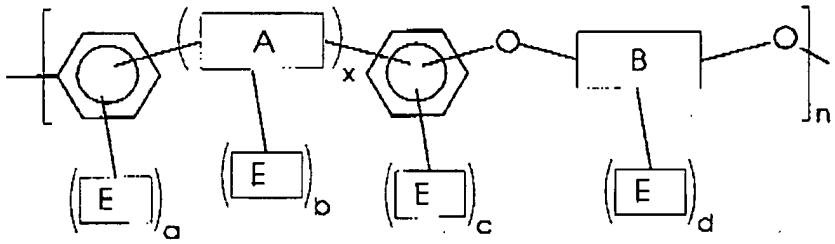
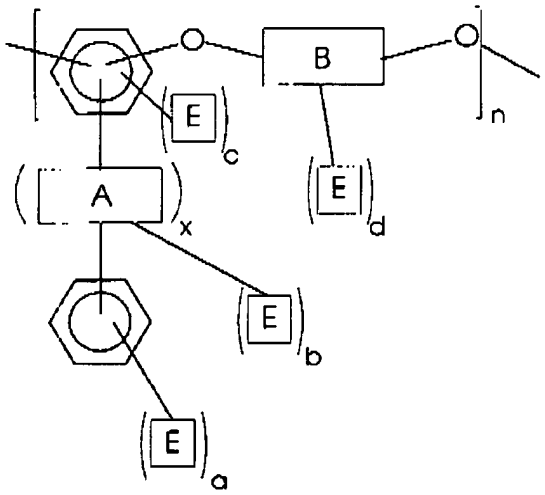
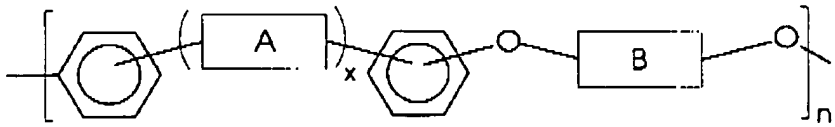
57. (Previously Presented) A composition according to claim 16 wherein the precursor polymer of the formula



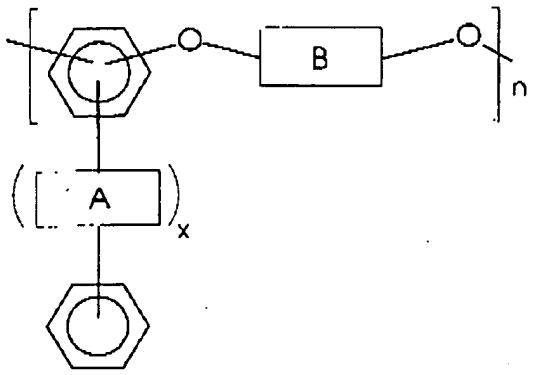
or



is prepared by substituting a preprecursor polymer of the formula



or



with epoxy groups, and wherein the value of n is such that the weight average molecular weight of the preprecursor polymer prior to crosslinking or chain extension is from about 1,000 to about 100,000.

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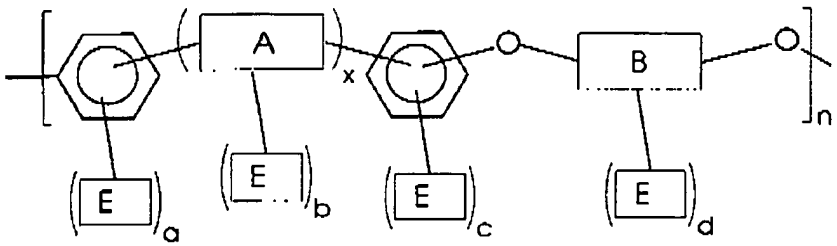
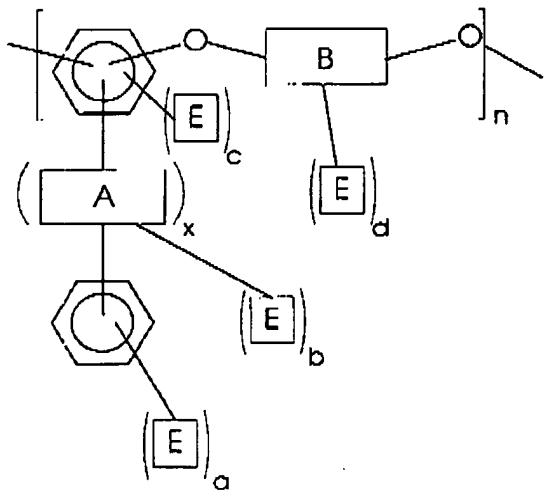
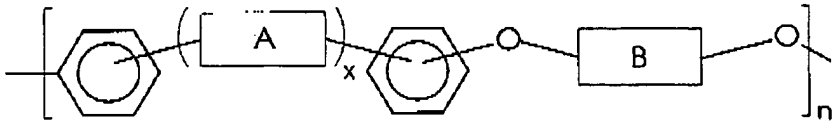
58. (Previously Presented) A composition according to claim 16 wherein the precursor polymer of the formula



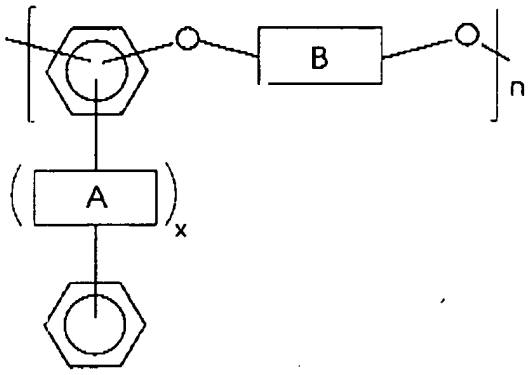
or



is prepared by substituting a preprecursor polymer of the formula

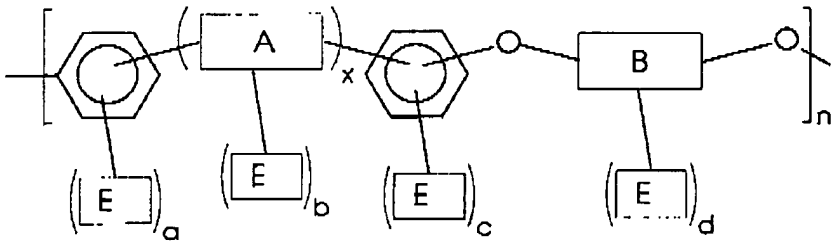


or

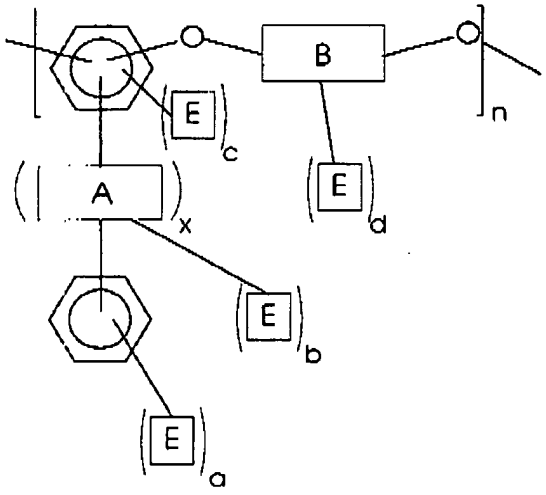


with epoxy groups, and wherein the value of n is such that the weight average molecular weight of the preprecursor polymer prior to crosslinking or chain extension is from about 1,000 to about 65,000.

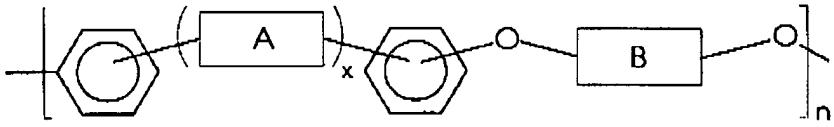
59. (Previously Presented) A composition according to claim 16 wherein the precursor polymer of the formula



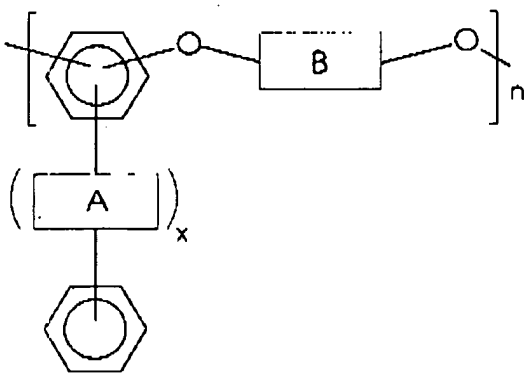
or



is prepared by substituting a preprecursor polymer of the formula



or



with epoxy groups, and wherein the value of n is such that the weight average molecular weight of the preprecursor polymer prior to crosslinking or chain extension is from about 1,000 to about 40,000.

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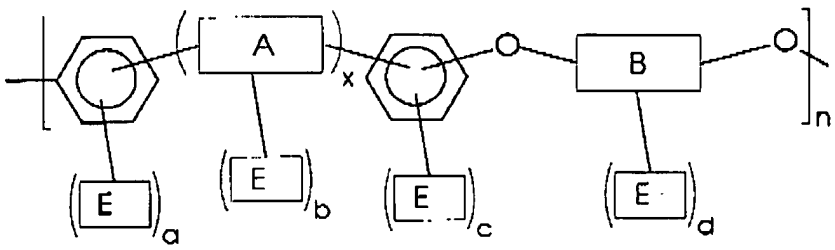
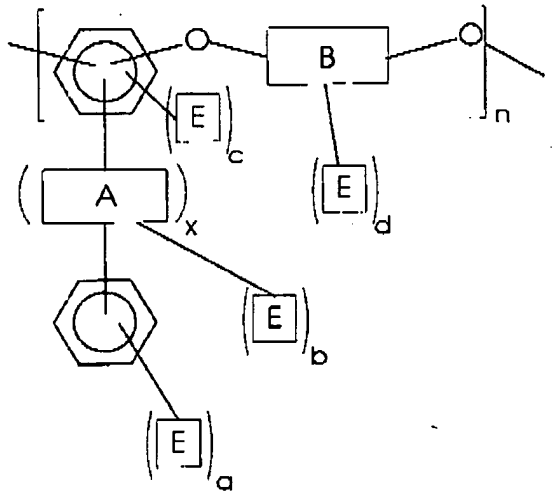
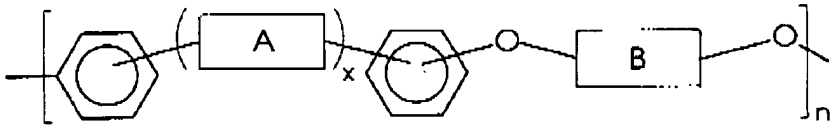
60. (Previously Presented) A composition according to claim 16 wherein the precursor polymer of the formula



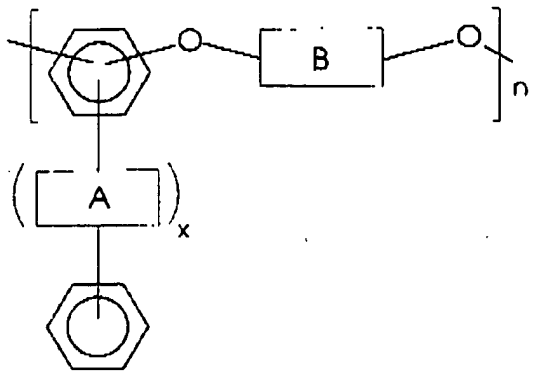
or



is prepared by substituting a preprecursor polymer of the formula



or



with epoxy groups, and wherein the value of n is such that the weight average molecular weight of the preprecursor polymer prior to crosslinking or chain extension is from about 3,000 to about 25,000.

61. (Cancelled)

62. (Currently Amended) A composition according to claim 16 wherein n is an integer of from ~~about~~ 5 to about 70.

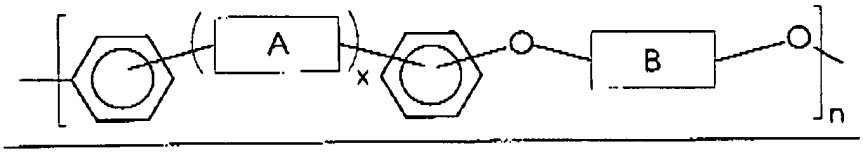
63. (Previously Presented) A composition according to claim 16 wherein n is an integer of from about 8 to about 50.

64. (Previously Presented) A composition according to claim 16 wherein the precursor polymer has a degree of substitution of on average from about 0.5 to about 2 epoxy groups per monomer repeat unit.

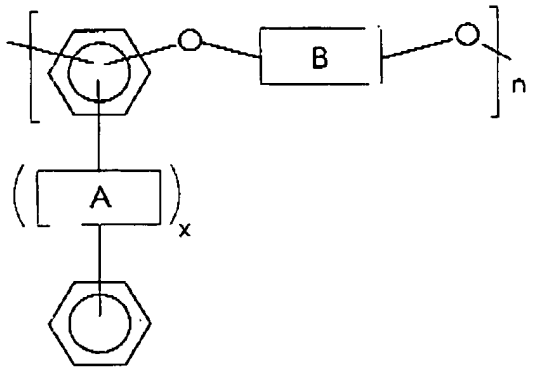
65. (Previously Presented) A composition according to claim 16 wherein the precursor polymer has a degree of substitution of on average from about 0.5 to about 1.5 epoxy groups per monomer repeat unit.

66. (Previously Presented) A composition according to claim 16 wherein the precursor polymer has a degree of substitution of from about 0.8 to about 1.3 milliequivalents of epoxy groups per gram of precursor polymer.

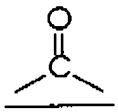
67. (Currently Amended) A composition ~~according to claim 33~~ which comprises a crosslinked or chain extended polymer having a backbone of the formula



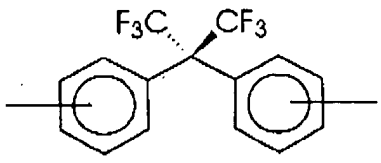
or



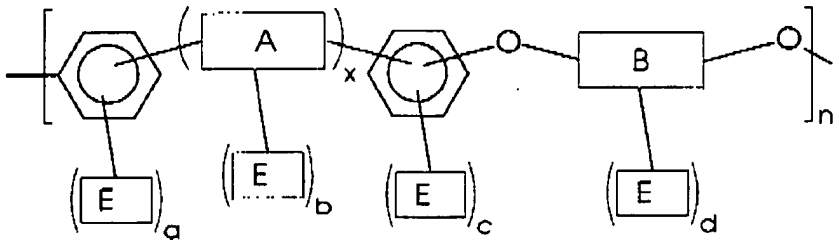
wherein the phenyl groups and the A and B groups can be substituted, wherein x is an integer of 0 or 1 and n is an integer representing the number of repeating monomer units and is at least 2, wherein x is 1, A is



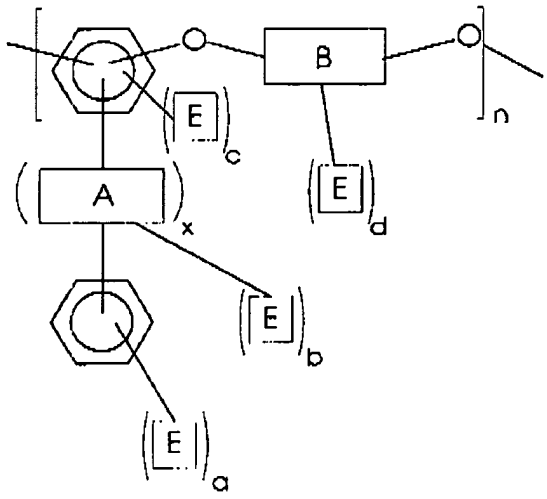
~~wherein~~ and B is



said crosslinked or chain extended polymer having been formed from a precursor polymer having epoxy groups contained on at least some of the monomer repeat units thereof, said precursor polymer being of the formula



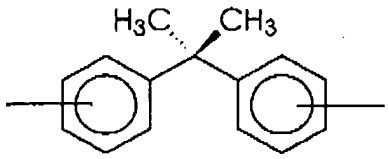
or



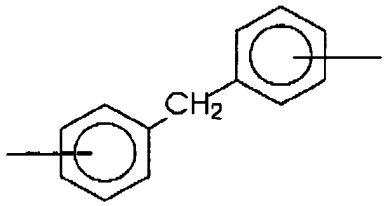
wherein "E" is an epoxy group and a, b, c, and d are each integers of 0, 1, 2, 3, or 4, provided that at least one of a, b, c, and d is equal to or greater than 1 in at least some of the monomer repeat units of the precursor polymer, said crosslinking or chain extension having occurred through linking groups formed by a reaction between the epoxy groups

contained on at least some of the monomer repeat units of the precursor polymer and amine groups on an amine curing agent.

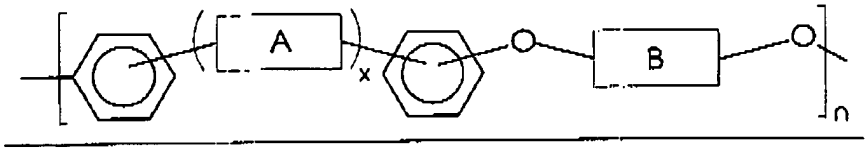
68. (Previously Presented) A composition according to claim 33 wherein B is



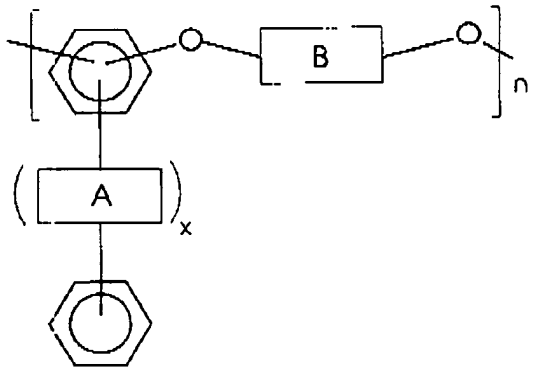
69. (Currently Amended) A composition according to claim 33 wherein B is



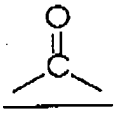
70. (Currently Amended) A composition ~~according to claim 33~~ which comprises a crosslinked or chain extended polymer having a backbone of the formula



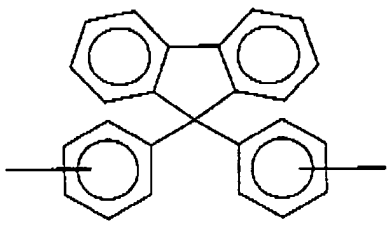
or



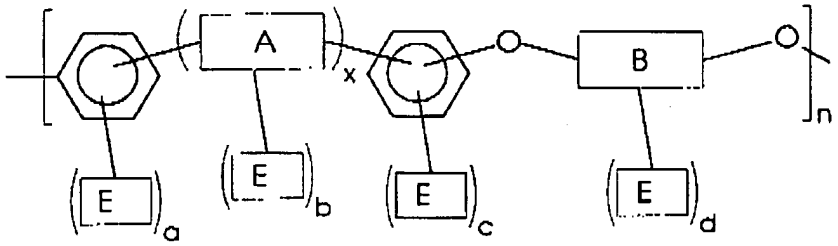
wherein the phenyl groups and the A and B groups can be substituted, wherein x is an integer of 0 or 1 and n is an integer representing the number of repeating monomer units and is at least 2, wherein x is 1, A is



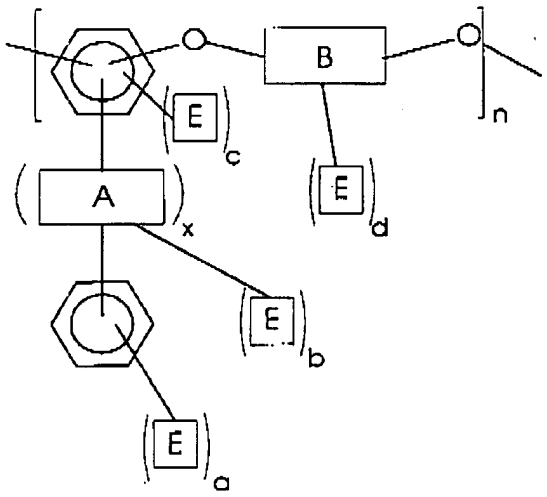
~~wherein~~ and B is



said crosslinked or chain extended polymer having been formed from a precursor polymer having epoxy groups contained on at least some of the monomer repeat units thereof, said precursor polymer being of the formula

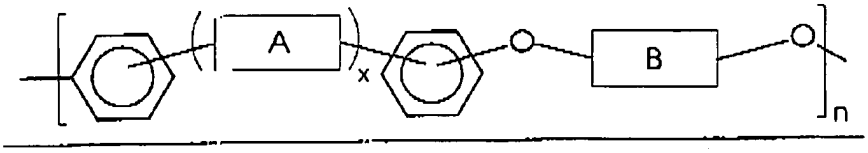


or

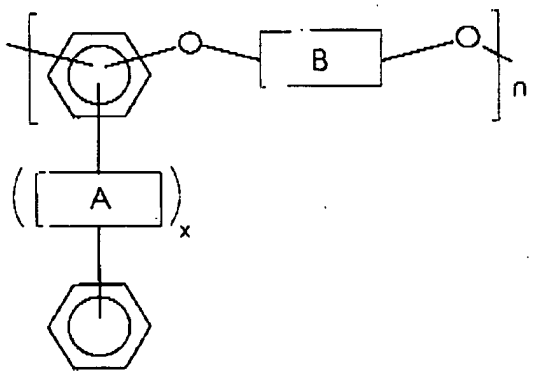


wherein "E" is an epoxy group and a, b, c, and d are each integers of 0, 1, 2, 3, or 4, provided that at least one of a, b, c, and d is equal to or greater than 1 in at least some of the monomer repeat units of the precursor polymer, said crosslinking or chain extension having occurred through linking groups formed by a reaction between the epoxy groups contained on at least some of the monomer repeat units of the precursor polymer and amine groups on an amine curing agent.

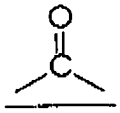
71. (Currently Amended) A composition ~~according to claim 33~~ which comprises a crosslinked or chain extended polymer having a backbone of the formula



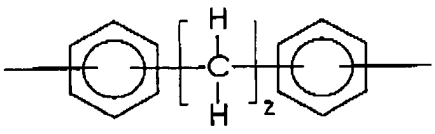
or



wherein the phenyl groups and the A and B groups can be substituted, wherein x is an integer of 0 or 1 and n is an integer representing the number of repeating monomer units and is at least 2, wherein x is 1, A is



~~wherein~~ and B is



wherein z is an integer of from 2 to about 20, wherein "E" is an epoxy group and a, b, c, and d are each integers of 0, 1, 2, 3, or 4, provided that at least one of a, b, c, and d is equal to or greater than 1 in at least some of the monomer repeat units of the precursor polymer, said crosslinking or chain extension having occurred through linking groups formed by a reaction between the epoxy groups contained on at least some of the monomer repeat units of the precursor polymer and amine groups on an amine curing agent.